EXHIBIT 4

Gigliotti, Tom [YRK:0171-M:EXCH]

From: Cheaito, Ramzi [SKY:7Z44:COCOS]
Sent: [redacted]
To: Gigliotti, Tom [YRK:0171-M:EXCH]
Cc: Gawargy, Michael [SKY:7L67-I:EXCH]
Subject: fw:AIN service implementation

ATT03420.txt

Hi Tom,

Further to Michael's notes on the possible implementations of this service, I would like to add one more option:

(iii) This service can be implemented on the CPE side in an answering-machine like box which would be hooked off the telephone set. A quick draft high-level description of this box functionality would be as follows:

- For any incoming call (answered/unanswered) to the subscriber-to-WCM (WHO-CALLED-ME) premises, the number and name of the caller will be logged into this machine's hard disk/DRAM.
- For remote retrieval of callers, the subscriber needs to dial in his/ her home/business phone number, and after couple of rings, the call will be directed to this machine. Access to this machine will be restricted by a passcode.
- Once successfully logged into this machine, the user will get a voice message telling what numbers and name of callers have been received. Also, the user will be given the choice to browse through the list of callers and to choose to call back the selected number. Moreover, if the caller has left a voice message on this subscriber's voicemail, WCM user can be given the choice to switch to the MVM and listen to the message. Once finished, then the user can switch back to the WCM list, and so on. Deletion/saving callers is also another option the WCM user gets (please refer to my draft copy of this disclosure that I mailed to you earlier for more details on the possible scenarios).
- Call Display components can also be integrated with this machine.
- MVM service interaction with this service can be resolved by using a special access code e.g. use '*wcm' (*926) to access the WCM machine if the call gets routed to MVM before hitting the WCM. When this type of interaction happens, usually the WCM user will get routed a MVM message; while this message is is played, dialing '*926' for example will allow the user to interrupt the MVM message and switch immediately to the WCM machine. Once finished, the user can switch back to the MVM (as noted above). This requires an extension of the MVM capabilities (provided by the Telco) to allow routing to WCM.

Hopefully this helps move this disclosure forward.

Cheers,
Ramzi.
--

---forwarded-message--->

[redacted]

To: Ramzi Cheaito :7Z44 (BNR) SKY BNR

Copy to: Tom Gigliotti :0171-M (EXCHANGE) YRK NT

From: Michael Gawargy :7L67-I (EXCHANGE) SKY BNR

Subject: AIN service implementation

Attached: 1 UNIX File: call-log-msgtrace.txt 3440 bytes
2 UNIX File: ORIGINAL.HEADER 800 bytes

Ramzi,

Here are the notes I've put together about the who-called-me service.

The service can be decomposed into two portions:

(i) incoming call logging (using AIN operations by datafilling triggers on the terminating SSP, and communicating with SCP service logic)

(ii) log retrieval (2 options - web-based retreival, or PSTN phone-base via an IP/service node)

* AIN is an ideal way to implement part (i) as the required AIN operations are already widely available in the RBOC's network.
* An ISP/telco internet server (communicating via an interface to an AIN SCP) is a viable implementation of part (ii) for web-based retrieval.
* An intelligent peripheral or service node is a viable implementation of part (ii) for PSTN-based retreival.

The following AIN SSP operations would be used to implement the service:

* Termination_Attempt (or Term_Resource_Available - see note*)
* T_Answer
* T_Busy (optional)
* T_No_Answer (optional)
* Send_Notification
* Termination_Notification
* Request_Report_BCM_Event
* Close
* Update
* Update_Success
* Default Routing to continue call processing in case SCP is unavailable
* Send_to_Resource operations (optional - only needed for PSTN-based retrieval using an intelligent peripheral)

(*) note that the Term_Resource_Available trigger can be used in place of Termination_Attempt once it becomes widely available in the PSTN network (all other AIN functionality listed above is available on Nortel's DMS100 SSP as part of the AIN Service Enablers portfolio as of release NA010).

High-level skeleton service logic alternatives follow (very rough):

ALTERNATIVE A: Use TAT-AuthTerm, T_Answer and SN/TN

```
1.1 TAT received
1.2 Send AuthTerm + RRBCME(T_Answer) + SN
2.0 awaiting EDP-N/Close
2.1 If T_Answer, mark call as answered; await Close (go to 3.0)
2.2 If Close message
        2.2.1 If CloseCause = callAnswered, mark call as answered;
        await TN (go to 5.0)
        2.2.2 else wait for TN (go to 4.0)
3.0 awaiting Close
3.1 If Close, await TN (go to 5.0)
4.0 awaiting TN to determine log
4.1 If TN indicates answered
        4.1.1 mark call as answered by forwarded station possibly
        voice-mail system (since T_Answer was not received); end
4.2 If TN indicates calledPartyBusy
        4.2.1 mark call as busy; end
4.3 If TN ndicated exception
        4.3.1 mark call as unasnwered; end
5.0 awaiting TN to clean up
5.1 when TN received, end
```

ALTERNATIVE B: Use T_Busy as welt (and possibly T_NoAnswer)

```
1.1 TAT received
1.2 Send AuthTerm + RRBCME(T_Busy,T_Answer) + SN
2.0 awaiting EDP-R/EDP-N/Close
2.1 If T_Answer, mark call as answered; await Close (go to 3.0)
2.2 If T_Busy EDP-R
        2.2.1 If callCanBeOffered (ie, cwt or aco, etc., or cfb?) then
        return Continue & go to 2.0
        2.2.2 else return Continue and mark call as busy;
        await TN (go to 5.0)
2.3 If Close message
        2.3.1 If CloseCause = callAnswered, mark call as answered;
        await TN (go to 5.0)
        2.3.2 else wait for TN (go to 4.0)
3.0 awaiting Close
3.1 If Close, await TN (go to 5.0)
4.0 awaiting TN to determine log
4.1 If TN indicates answered
        4.1.1 mark call as answered by forwarded station possibly
        voice-mail system (since T_Answer was not received); end
4.2 If TN indicates calledPartyBusy
        4.2.1 mark call as busy
        (even though T_Busy should have caught it); end
5.0 awaiting TN to clean up
5.1 when TN received, end
```

Cheers,
Michael

ps - Attached is an AIN message trace of some of the operations to be used.

<<call-log-msgtrace.txt>>

Received: from zcard00n.ca.nortel.com by bcars520; [redacted]
Received: by zcard00n.ca.nortel.com with Internet Mail Service (5.0.1460.8)
    id <Q3SR3173>; [redacted]
Message-ID: <E1A1F2347D33D111A1610000F881BD0601FE9CEF@bmery271.ca.nortel.com>
From: "Gawargy, Michael [SKY:7L67-I:EXCH]" <MGAWARGY@AmericasM01.nt.com>
To: "Cheaito, Ramzi [SKY:7Z44:COCOS]" <RAMZI.Cheaito.0511612@bnr.ca>
Cc: "Gigliotti, Tom [YRK:0171-M:EXCH]" <gigliott@americasm01.nt.com>
Subject: AIN service implementation
Date: [redacted]
MIME-Version: 1.0
X-Mailer: Internet Mail Service (5.0.1460.8)
Content-Type: multipart/mixed;
    boundary="---- =_NextPart_000_01BDC217.EB3690A0"

```
TRANSACTION SSP: 0000AD00  SCP: 000009E2  Filter: TAT_AT_TNA

MESSAGE
NoName:
QueryWithPermission
(
    OriginationTransactionID(0000AD00)
    Components
    (
        InvokeLast
        (
            InvokeID(39)
            PrivateTCAP
            TerminationAttempt
            ParameterSequence
            (
                UserID
                (
                    DN(6136213705)
                )
                BearerCapability(speech)
                CalledPartyID(subscriberNumber even isdnNumberingPlan 6
136213705)
                TriggerCriteriaType(terminationAttempt)
                CalledPartyStationType(identifiedLineNoSpecialTrmt)
                ChargeNumber(callingPartyANINational even isdnNumbering
Plan 6136211611)
                CallingPartyID(uniqueNationalNumber even networkProvide
d presentationAllowed isdnNumberingPlan 6136211611)
                ChargePartyStationType(identifiedLineNoSpecialTrmt)
            )
        )
    )
)
;

MESSAGE
AT_TA:
ConversationWithPermission
(
    TransactionIDs(000009E2 0000AD00)
    Components
    (
        InvokeLast
        (
            InvokeID(3A 39)
            PrivateTCAP
            AuthorizeTermination
            ParameterSequence
            (
                AMASlpID(112311111)
            )
        )
        InvokeLast
        (
            InvokeID(3B 39)
            PrivateTCAP
            SendNotification
            ParameterSequence
            (
                EchoData(112233445566)
            )
        )
        InvokeLast
        (
            InvokeID(3C 39)
            PrivateTCAP
            RequestReportBCMEvent
            ParameterSequence
            (
                EDPNotification(tAnswer)
            )
        )
    )
)
;

MESSAGE
NoName:
ConversationWithPermission
(
    TransactionIDs(0000AD00 000009E2)
    Components
    (
        InvokeLast
        (
            InvokeID(3A)
            PrivateTCAP
            TAnswer
            ParameterSequence
            (
                UserID
                (
                    DN(6136213705)
                )
                BearerCapability(speech)
                NotificationIndicator(true)
            )
        )
    )
)
;

MESSAGE
NoName:
Response
(
    DestinationTransactionID(000009E2)
    Components
    (
        InvokeLast
        (
            InvokeID(FF)
            PrivateTCAP
            Close
            ParameterSequence
            (
                UserID
                (
                    DN(6136213705)
                )
                BearerCapability(speech)
                CloseCause(calledPartyAnswered)
            )
        )
    )
)
;

TRANSACTION SSP: --------  SCP: --------  Filter: (Unmatched)

MESSAGE
NoName:
Unidirectional
(
    NoTransactionID
    (
    )
    Components
    (
        InvokeLast
        (
            InvokeID(FF 3B)
            PrivateTCAP
            TerminationNotification
            ParameterSequence
            (
                EchoData(112233445566)
                TerminationIndicator(no yes no no no no no)
                ConnectTime(0000003007)
            )
        )
    )
)
;
```